



PATENT ABSTRACTS OF JAPAN

(11) Publication number: **2000200273 A**(43) Date of publication of application: **18.07.00**

(51) Int. Cl.

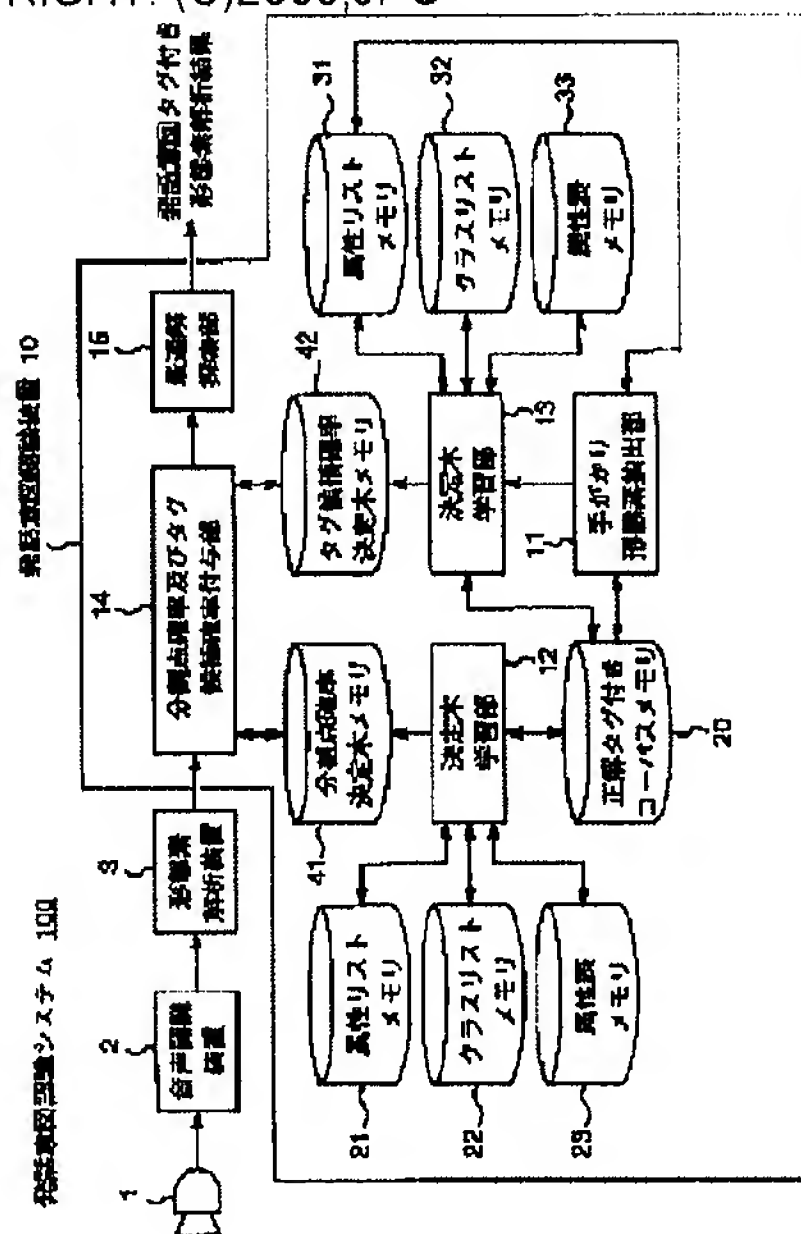
G06F 17/27(21) Application number: **11300908**(22) Date of filing: **22.10.99**(30) Priority: **04.11.99 JP 10313073**(71) Applicant: **ATR INTERPRETING
TELECOMMUNICATIONS RES
LAB**(72) Inventor: **TANAKA HIDEKI****(54) SPEAKING INTENTION RECOGNIZING DEVICE****(57) Abstract:**

PROBLEM TO BE SOLVED: To provide a speaking intention recognizing device which can perform accurate recognition even if there are more than one speaking intentions.

SOLUTION: A clue morpheme extraction part 11 extracts a clue morpheme having a large relativity to each speaking intention according to corpus data with a correct answer, a decision tree learning part 12 learns to generate a division-point probability decision tree which is divided depending upon attribute values of respective attributes according to the corpus data to determine division point probability, and a decision tree learning part 13 learns to generate a tag candidate probability decision tree which is divided depending upon the attribute values of the prescribed attributes according to the corpus data to determine imparting probability for impart a speaking intention tag. A division-point probability and tag candidate probability imparting part 14 calculates division-point probability and tag candidate probability by referring to the division-point probability decision tree and tag candidate

probability decision tree for the morpheme-analyzed character string and an optimum solution search part 15 searches for and outputs the solution for a speaking intention tag having larger product of the two probability values.

COPYRIGHT: (C)2000,JPO



(19)日本国特許庁 (J P)

(12) 公 開 特 許 公 報 (A)

(11)特許出願公開番号
特開2000-200273
(P2000-200273A)

(43)公開日 平成12年7月18日(2000.7.18)

(51)Int.Cl.⁷
G 0 6 F 17/27

識別記号

F I
G 0 6 F 15/38

テーマコード(参考)

M

審査請求 有 請求項の数 2 O L (全 24 頁)

(21)出願番号 特願平11-300908

(22)出願日 平成11年10月22日(1999.10.22)

(31)優先権主張番号 特願平10-313073

(32)優先日 平成10年11月4日(1998.11.4)

(33)優先権主張国 日本(J P)

(71)出願人 593118597

株式会社エイ・ティ・アール音声翻訳通信
研究所

京都府相楽郡精華町光台二丁目2番地2

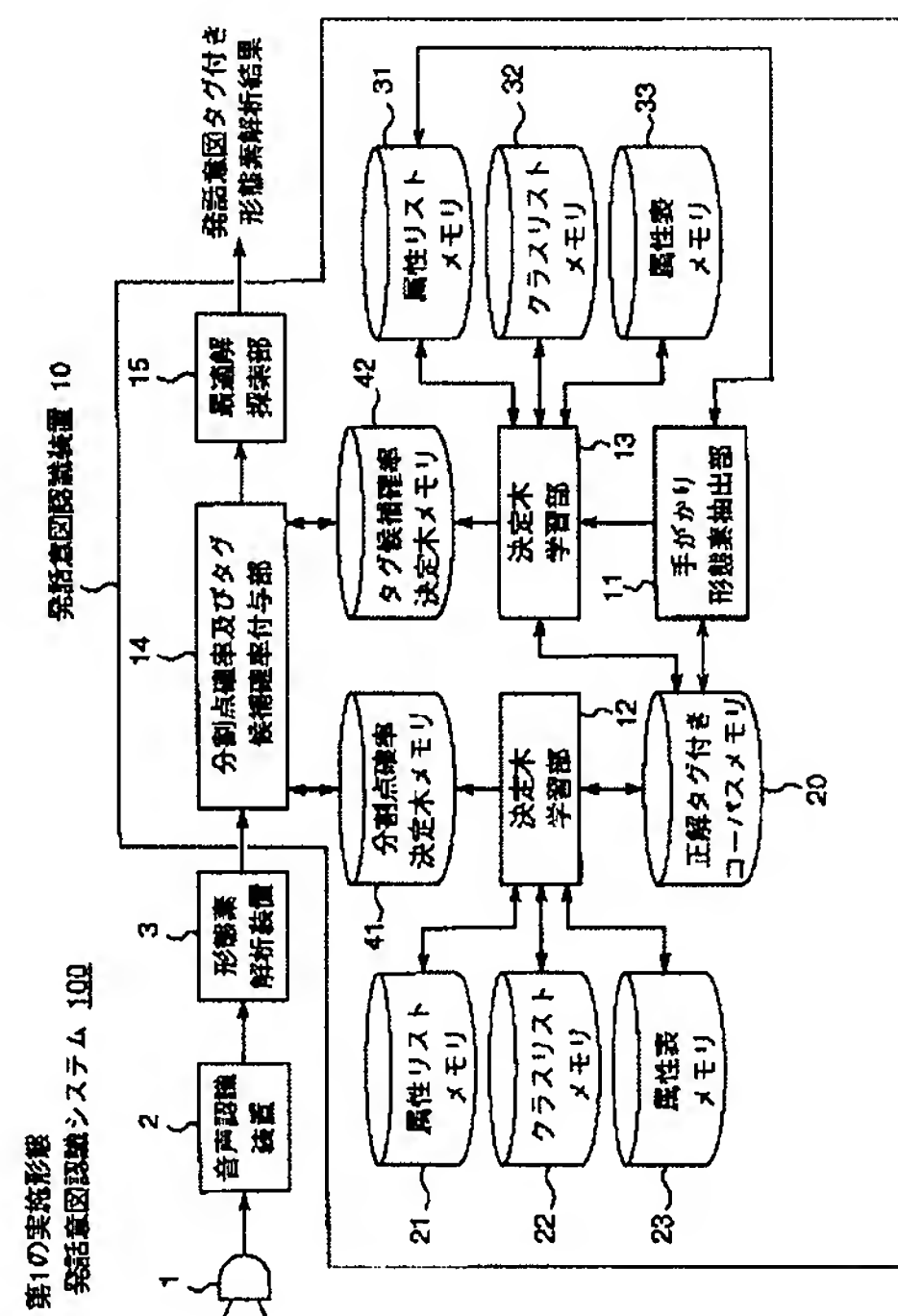
(72)発明者 田中 英輝

京都府相楽郡精華町大字乾谷小字三平谷5
番地 株式会社エイ・ティ・アール音声翻
訳通信研究所内

(74)代理人 100062144

弁理士 青山 葆 (外2名)

(54)【発明の名称】 発話意図認識装置



$$(T_h, U_h) = \underset{T, U}{\operatorname{argmax}} P(T, U | M)$$

$$\begin{aligned} & (T_h, U_h) \\ &= \underset{T, U}{\operatorname{argmax}} \prod_{i=1}^n P(t_i, u_i | t_1, \dots, t_{i-1}, u_1, \dots, u_{i-1}, M) \end{aligned}$$

$$\begin{aligned} & (T_h, U_h) \\ &= \underset{T, U}{\operatorname{argmax}} \prod_{i=1}^n P(u_i | t_1, \dots, t_{i-1}, u_1, \dots, u_{i-1}, M) \\ & \quad \times P(t_i | t_1, \dots, t_{i-1}, u_1, \dots, u_i, M) \end{aligned}$$

$$\begin{aligned} & (T_h, U_h) \\ &= \underset{T, U}{\operatorname{argmax}} \prod_{i=1}^n \{P(u_i | T_1^{i-1}, U_1^{i-1}, M) \times P(t_i | T_1^{i-1}, U_1^i, M)\} \end{aligned}$$

$$\begin{aligned}
&P(u_i | T_1^{i-1}, U_1^{i-1}, M) \\
&= P(m_{1:s,i(i-1)}^{(i-1)} \nabla m_1^{(i)} | h_u) P(m_{1:s,i(i)}^{(i)} \nabla m_1^{(i+1)} | h_u) \\
&\quad \times \prod_{j=1}^{last(i)-1} P(m_j^{(i)} \rightarrow m_{j+1}^{(i)} | h_u)
\end{aligned}$$

$$\begin{aligned}
&(Th, Uh) \\
&\quad n \\
&= \text{argmax} \Pi \{ P(m_{1:s,i(i-1)}^{(i-1)} \nabla m_1^{(i)} | h_u) P(m_{1:s,i(i)}^{(i)} \nabla m_1^{(i+1)} | h_u)
\end{aligned}$$

$$T,U \ i=1$$

$$\begin{aligned}
&\quad last(i)-1 \\
&\times \prod_{j=1} P(m_j^{(i)} \rightarrow m_{j+1}^{(i)} | h_u)
\end{aligned}$$

$$\times P(t_i | h_i) \}$$

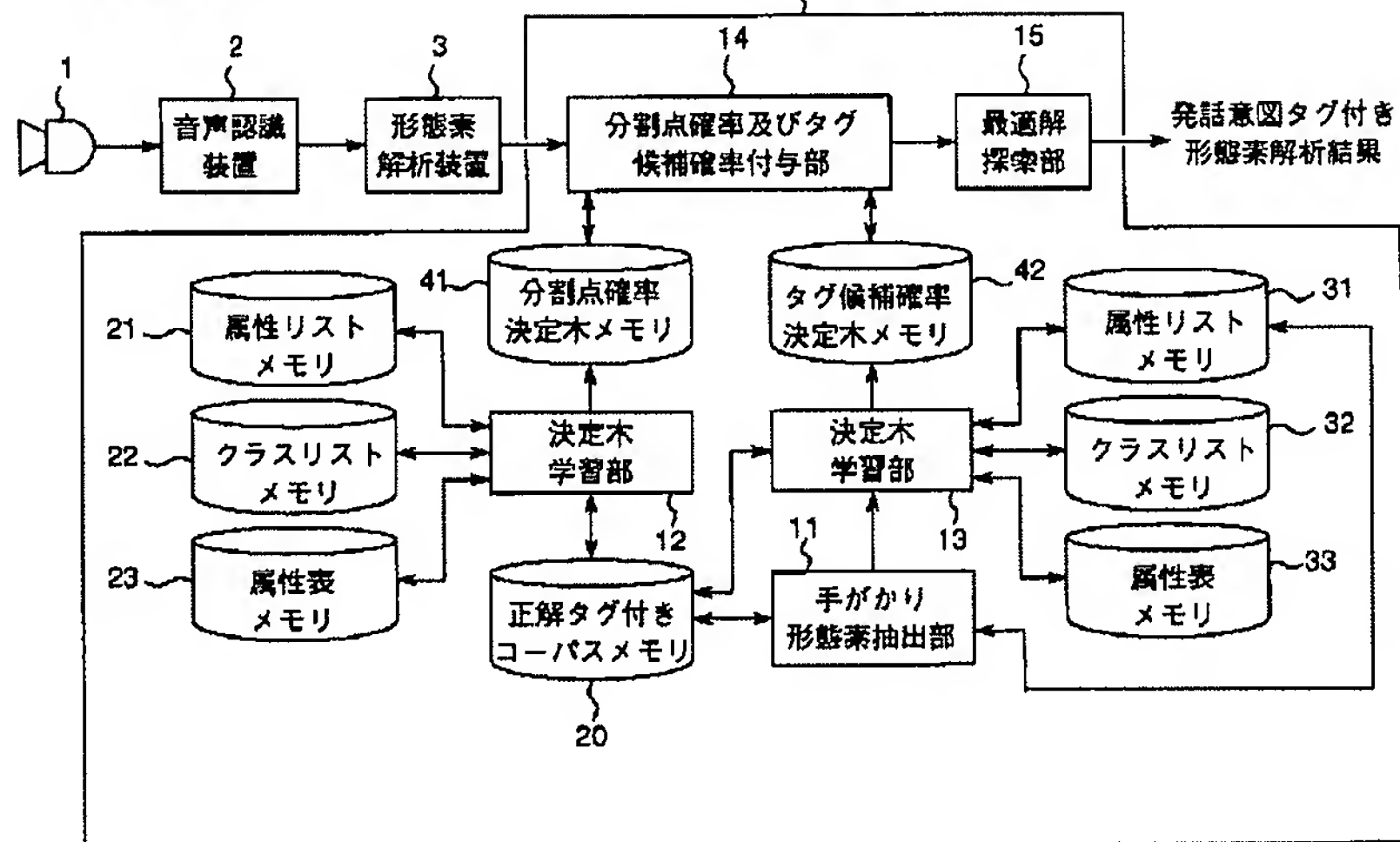
$$\begin{aligned}
&P(m_{1:s,i(i-1)}^{(i-1)} \nabla m_1^{(i)} | h_u) P(m_{1:s,i(i)}^{(i)} \nabla m_1^{(i+1)} | h_u) \\
&\quad last(i)-1 \\
&\times \prod_{j=1} P(m_j^{(i)} \rightarrow m_{j+1}^{(i)} | h_u)
\end{aligned}$$

$$H_o(C) = - \sum_{i=1}^k \{ |C_i| / |C| \} \log_2 \{ |C_i| / |C| \}$$

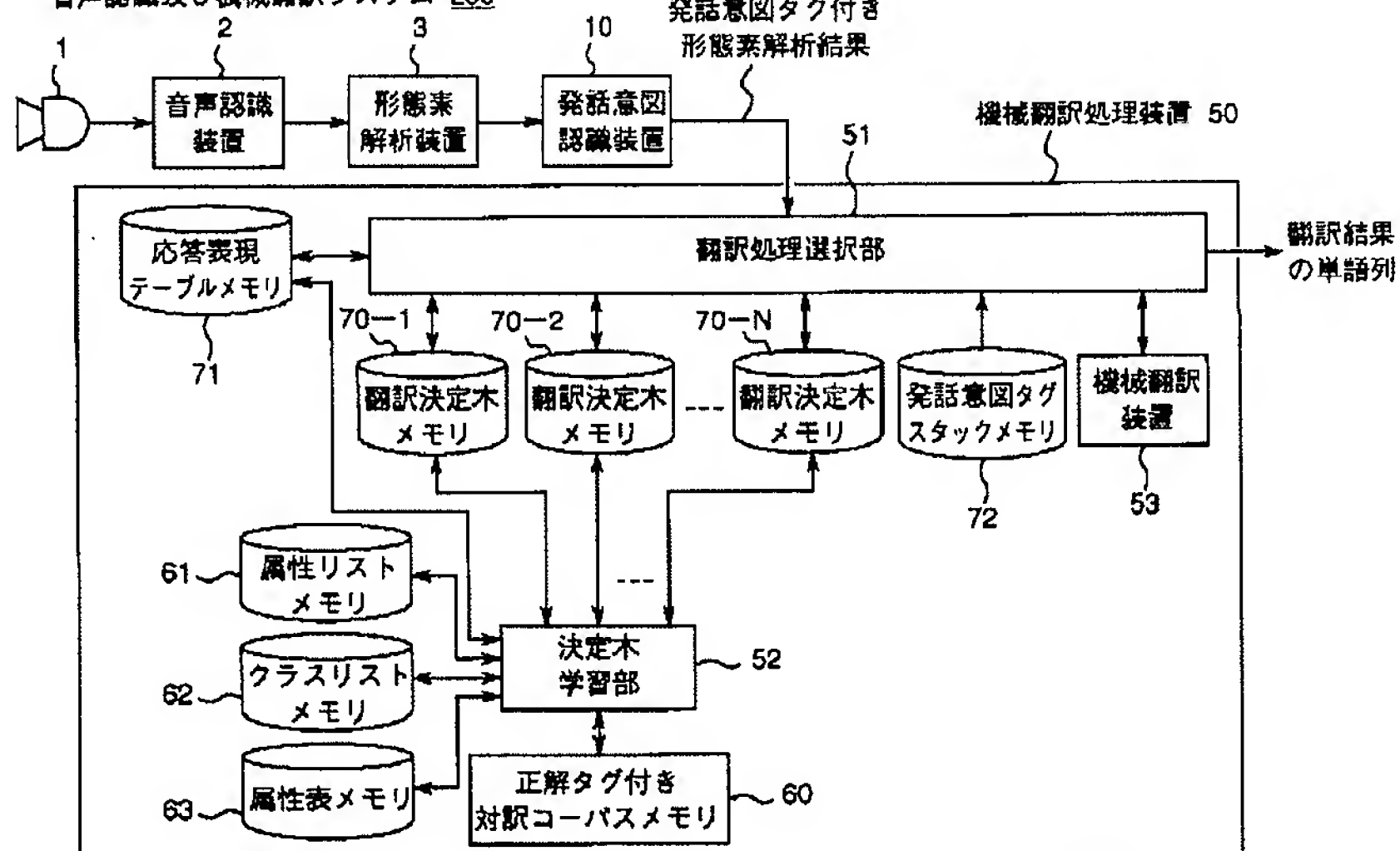
$$H(C|a_1) = \sum_{j=1}^m |B_j| / |C| H_o(B_j)$$

- (1) クラス：翻訳先言語での翻訳表現（文字列）。
- (2) 属性リスト：
 - (a) 現発話の発話意図タグ。
 - (b) 現発話の出現表現。
 - (c) 過去の発話意図タグ。
 - (d) 話者。

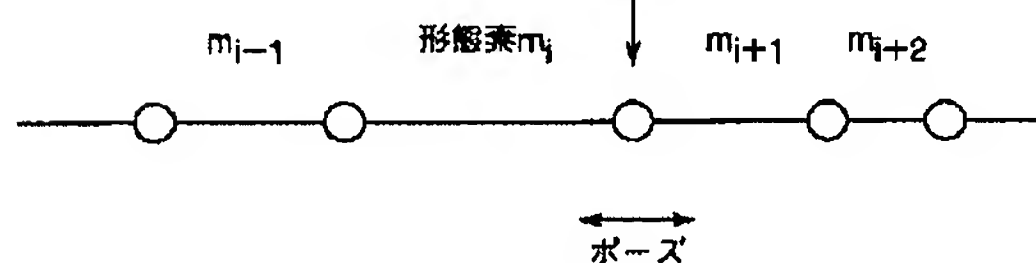
発話意図認識装置 10



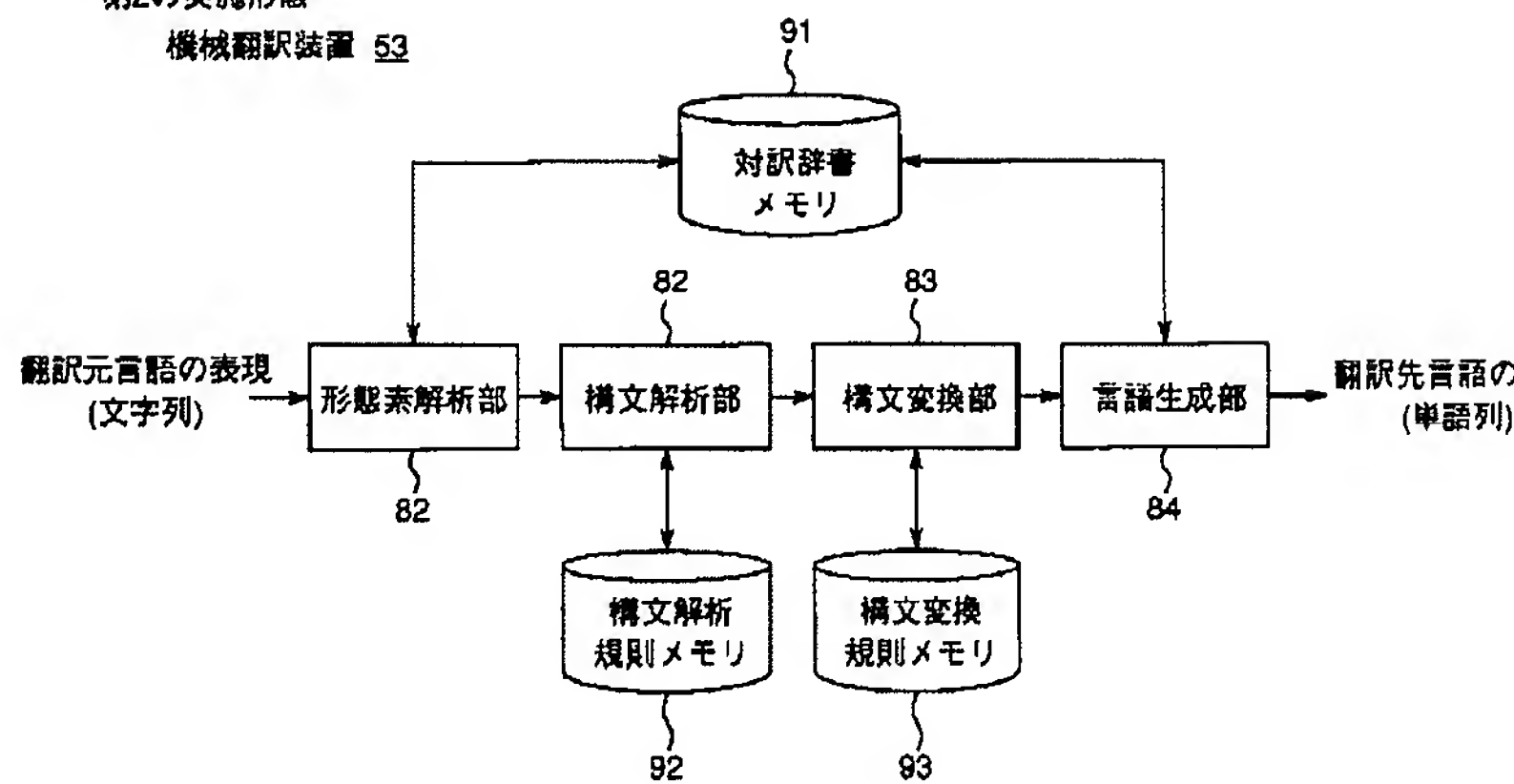
発話意図タグ付き
形態素解析結果



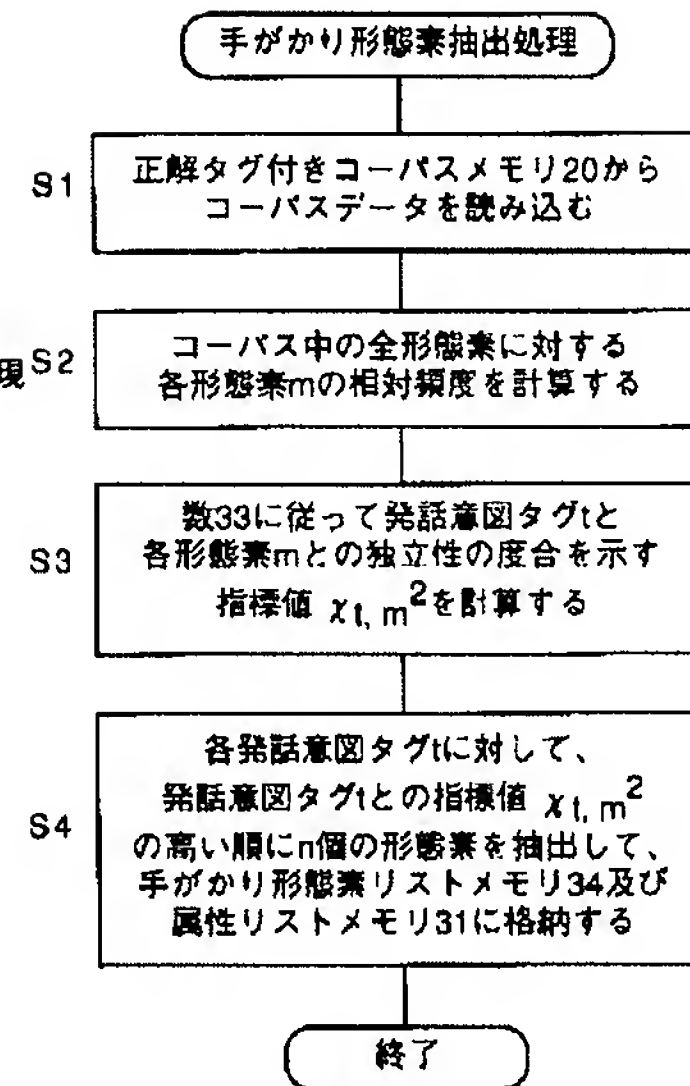
分割？



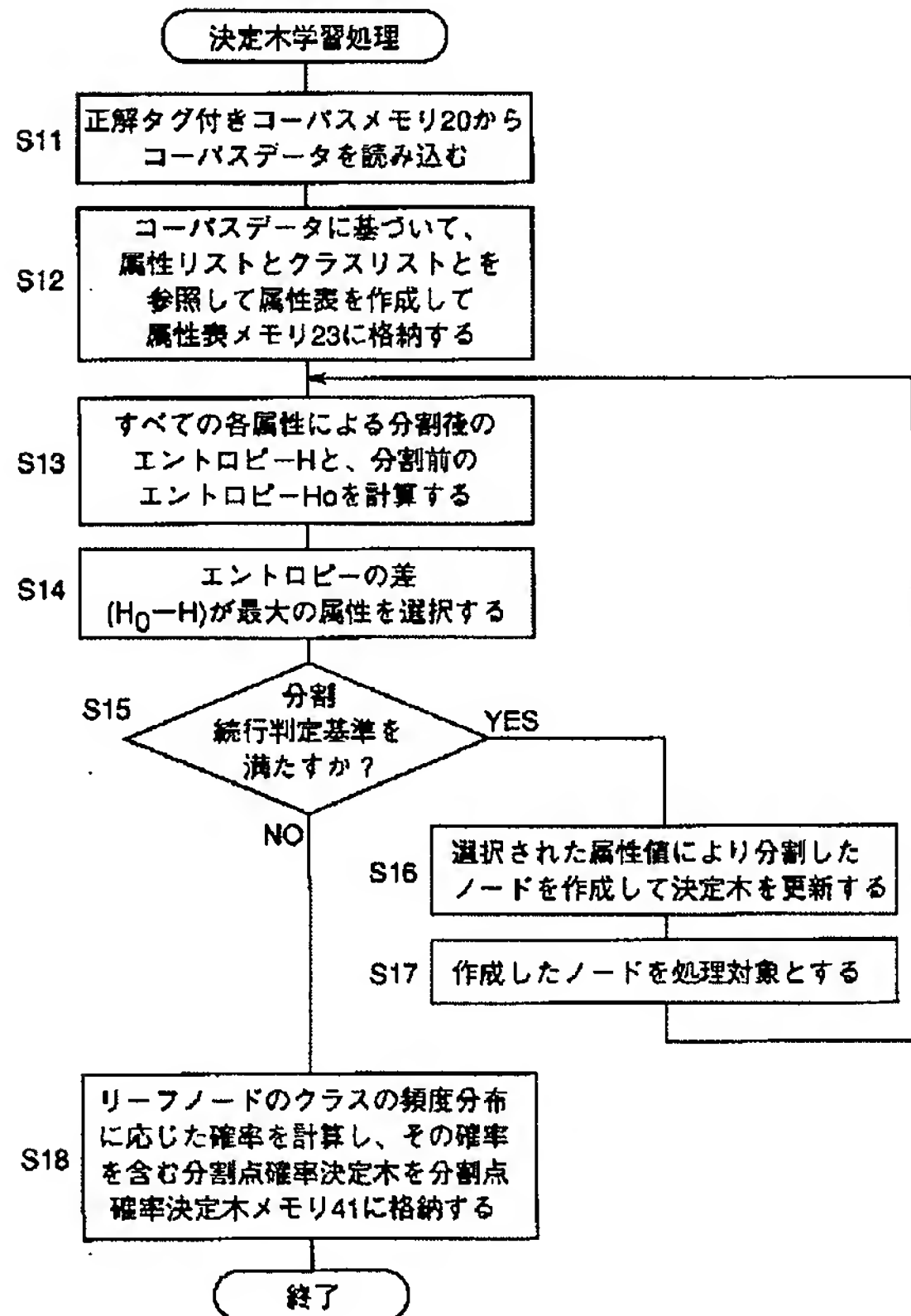
第2の実施形態
機械翻訳装置 53



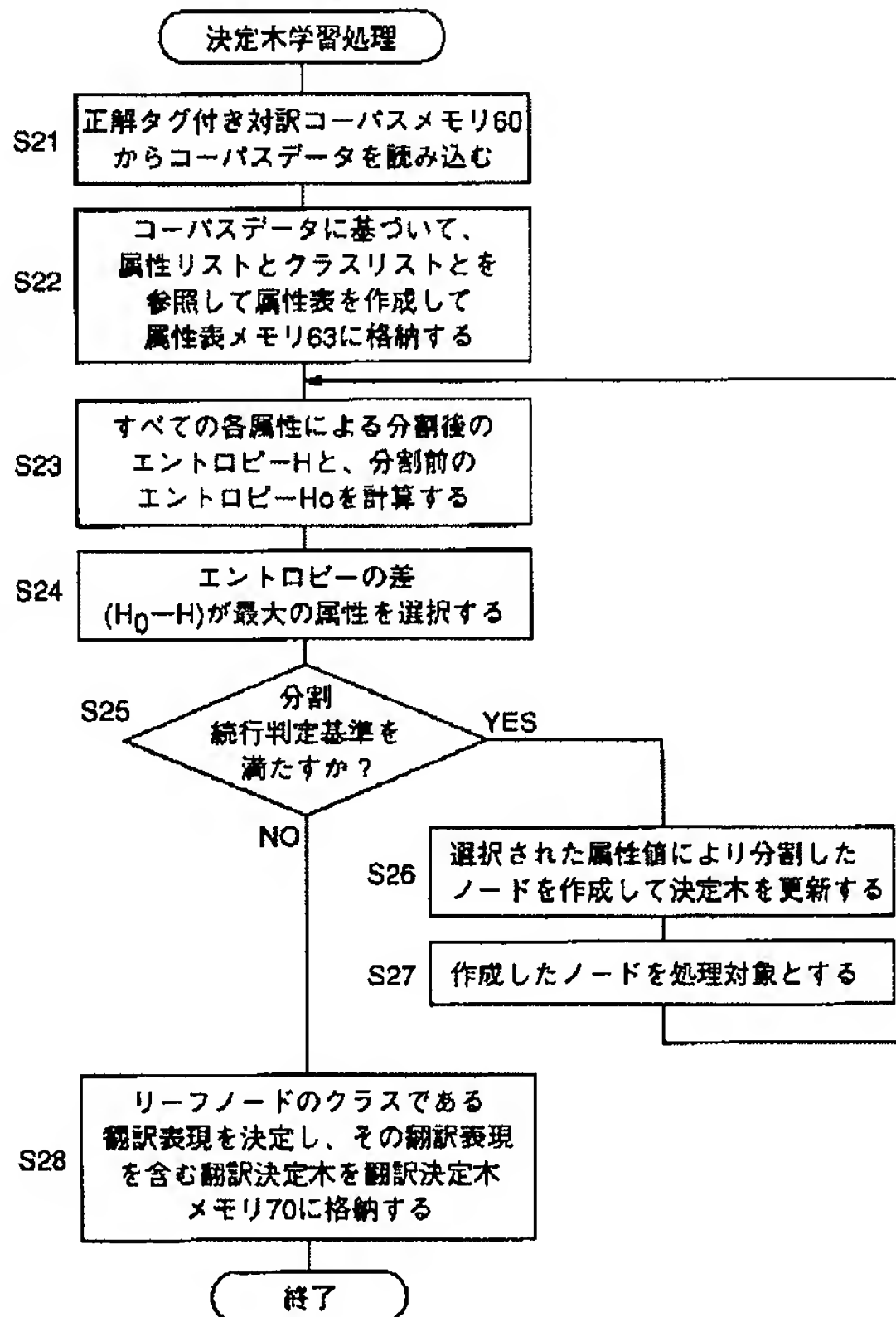
第1の実施形態

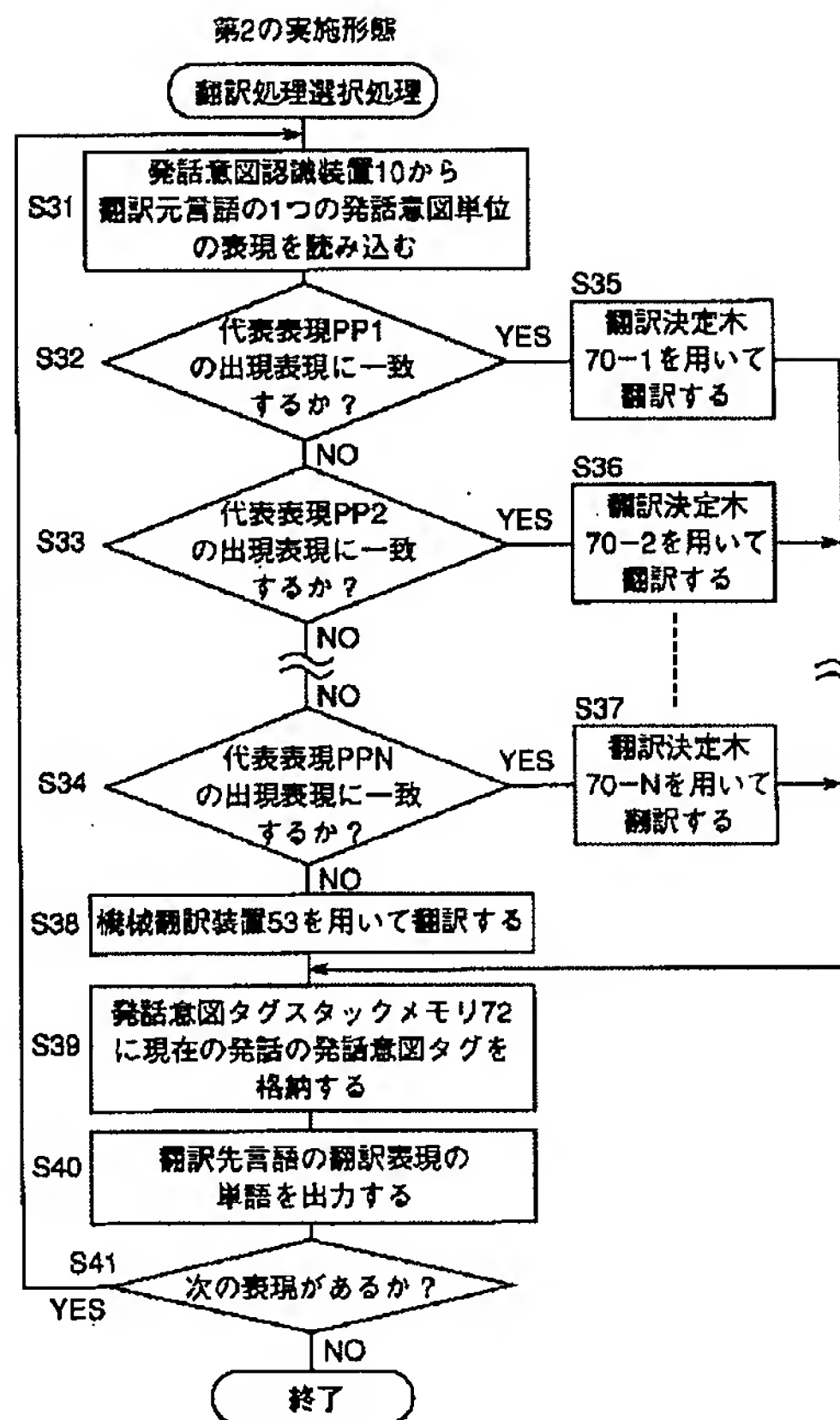


第1の実施形態

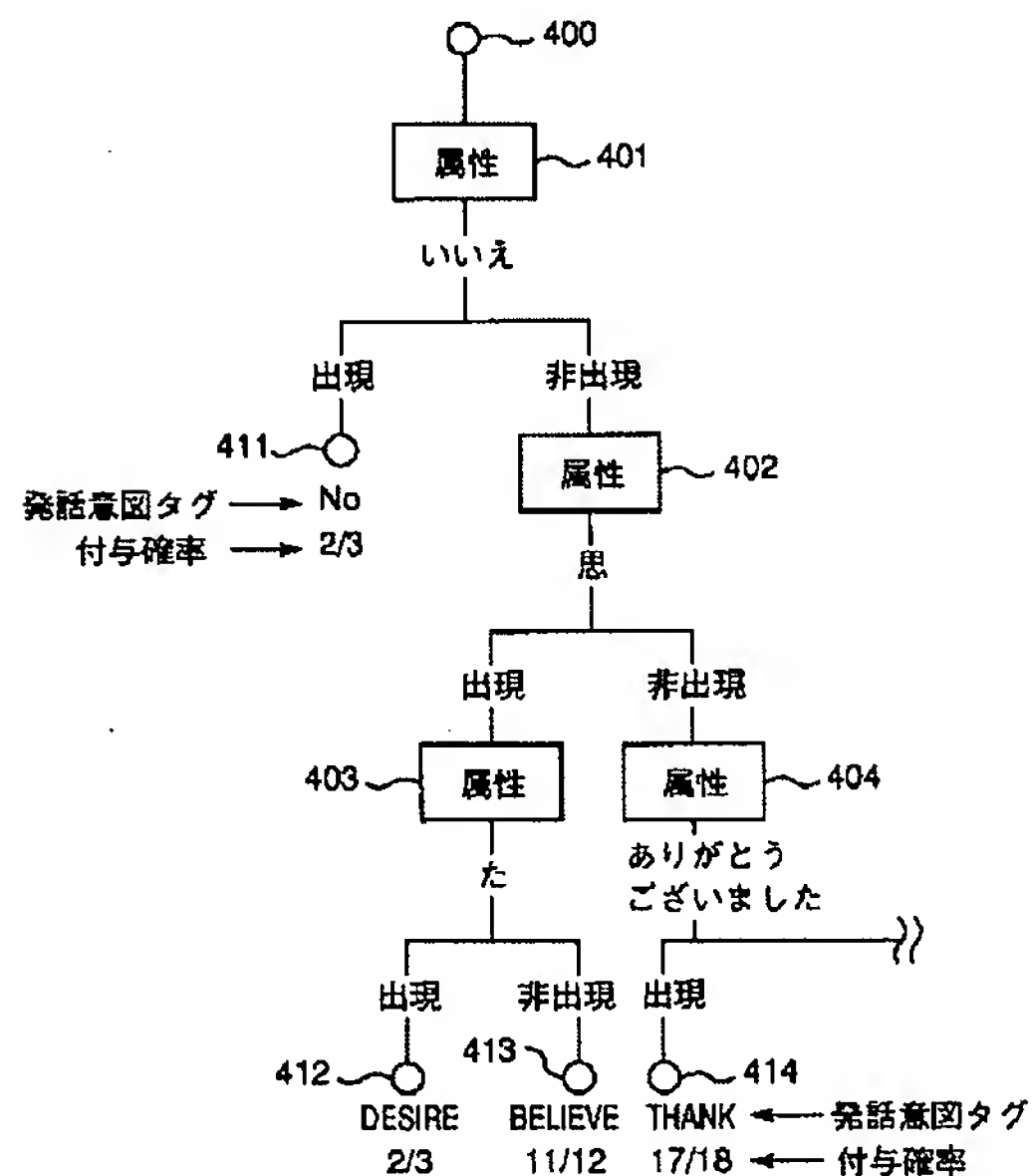


第2の実施形態

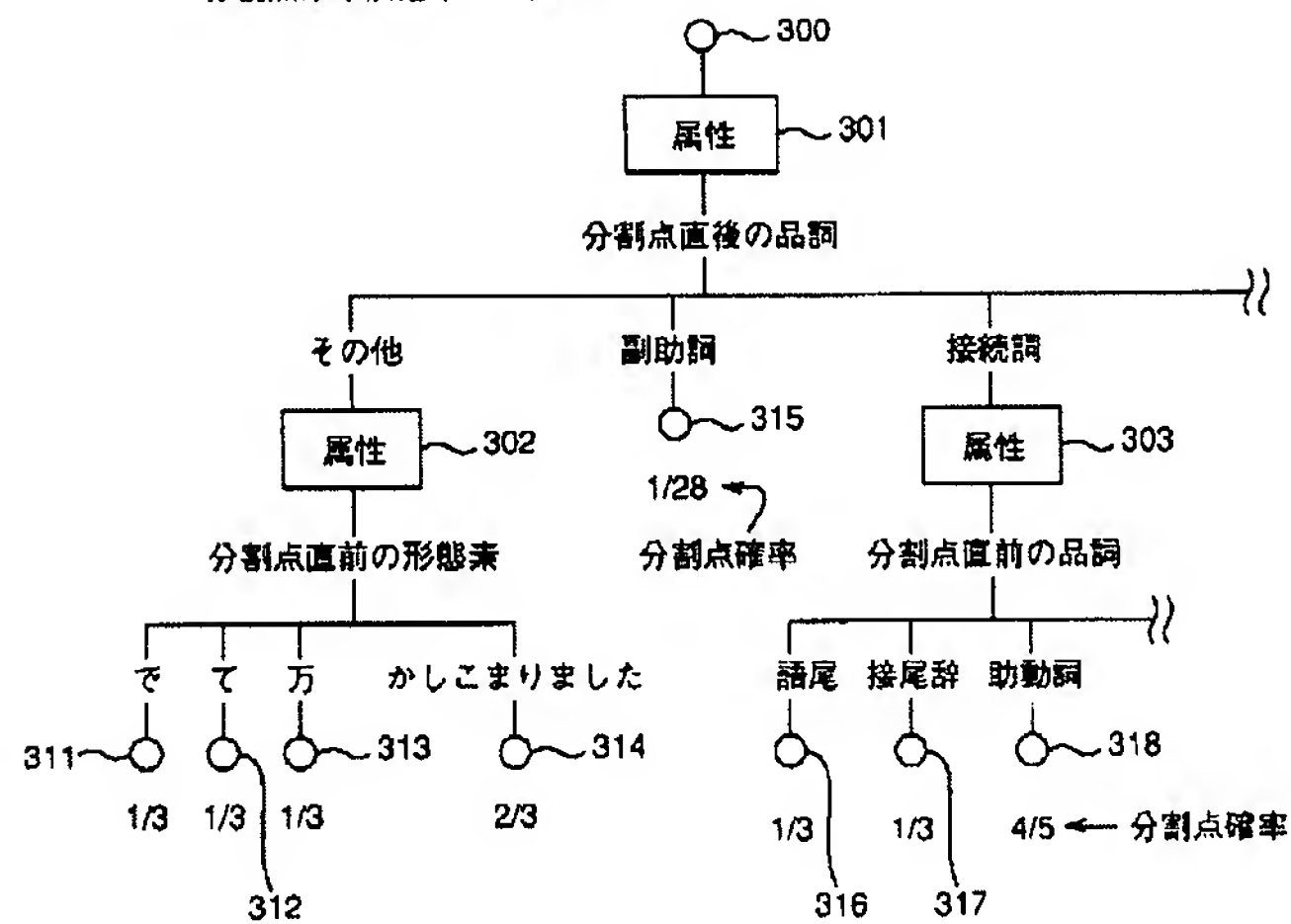




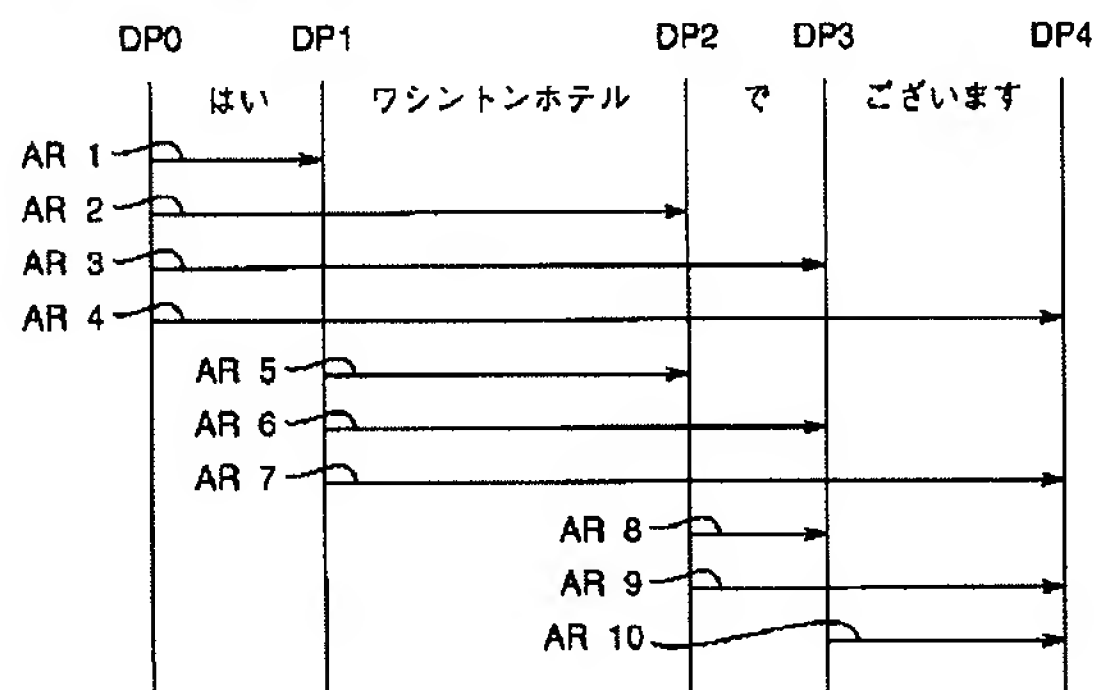
タグ候補確率決定木の一例



分割点確率決定木の一例

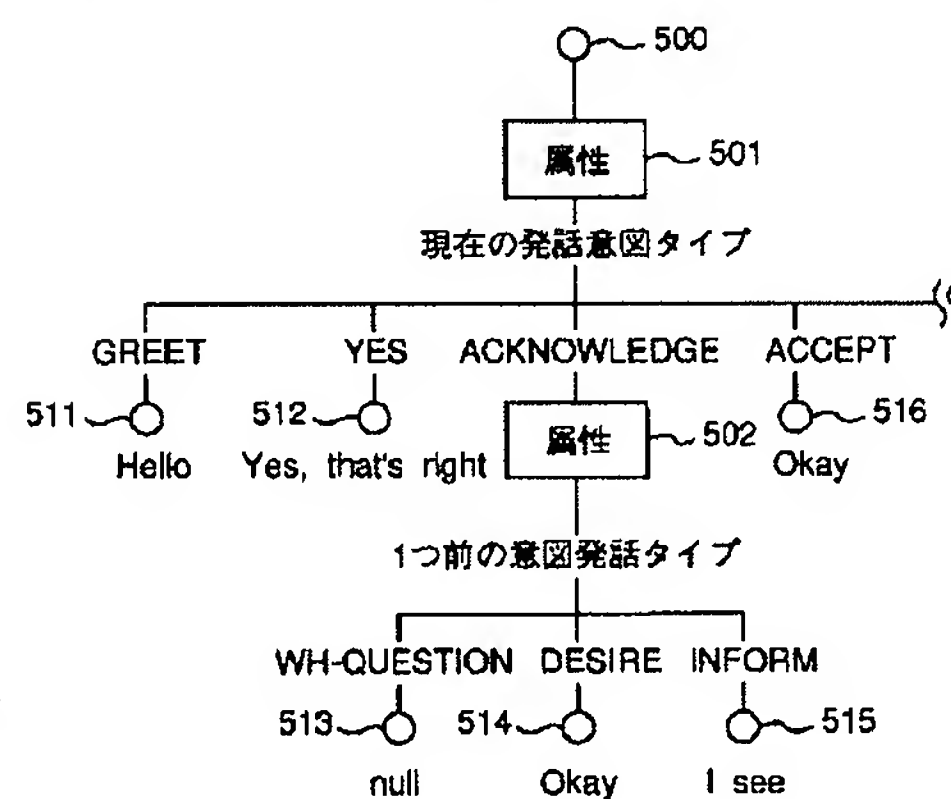


第1の実施形態の処理例

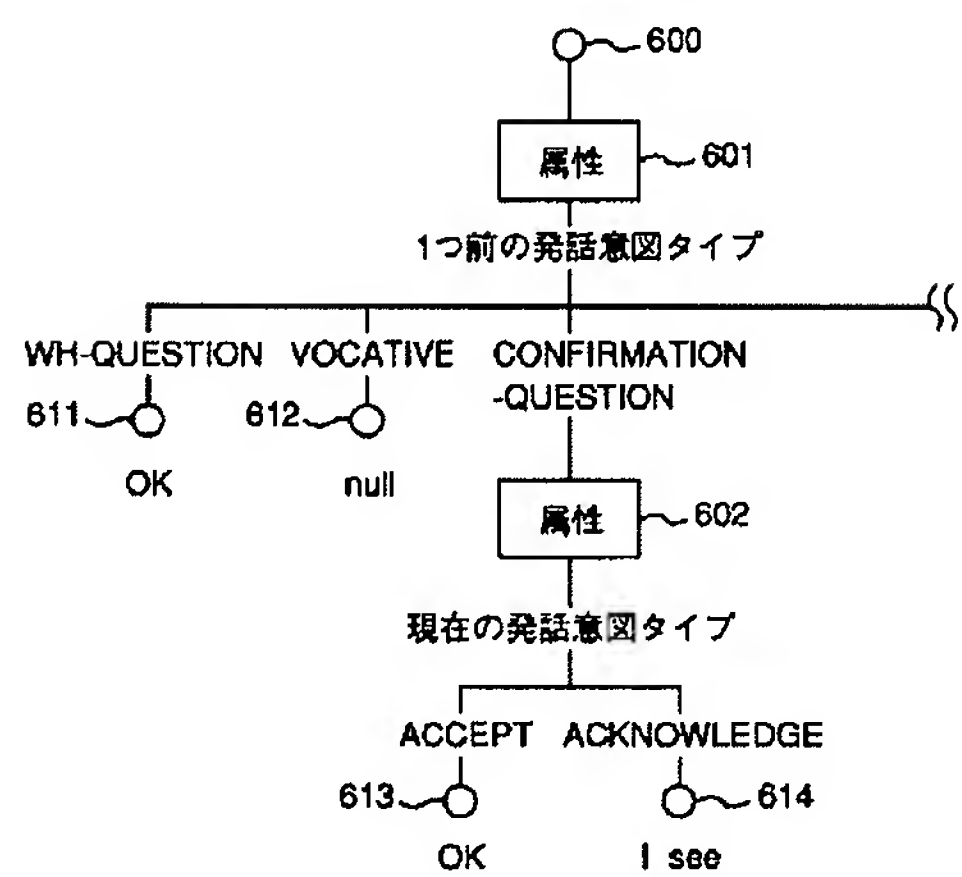


第2の実施形態

代表表現「はい」の翻訳決定木の一例



代表表現「かしこまりました」の翻訳決定木の一例



代表表現「わかりました」の翻訳決定木の一例

